

# CORAL REEF BIODIVERSITY IN THE LOMAIVITI GROUP, FIJI.

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## APPENDIX 1

### Detailed Site Descriptions from Surveys Undertaken in the Lomaiviti Group, Fiji.

Site	Type	Date
Samu Reef	Patch reef	21 April 2001
<p>Patch reef rising from sloping bottom at 15 m to water surface. Site located at eastern edge of reef,acing Lautoka. Very degraded, is heavily fished due to accessibility from Lautoka. Coral bleaching is significant (7.5%), with clear evidence of dead colonies from the year 2000 La Nina (20%). Lower path reefs at &gt; 12 m nevertheless v. diverse for coral cover.</p> <p>Habitat types.</p> <ol style="list-style-type: none"> <li>1) rocky reef with low hard coral cover, high algal turf and high dead coral.</li> <li>2) rubble base of cliff, coral fragments from corals in A.</li> <li>3) rocky substrate with high algal turf, low hard and soft coral cover</li> <li>4) lower slope with coral heads and sand, low cover of live hard corals but with high species diversity</li> </ol>		

Site	Type	Date
Yellow Wall, North Face – Mutiny Seamount Cathedral – E6 Seamount	Seamounts	22 April 2001
<p>Mutiny and E6 Seamounts rise out of very deep water to almost sea level. Very high cover and diversity of</p>		

soft coral at all diving depths, with abundant hard corals in shallow pockets. However, hard corals, particularly branching corals, showed high mortality from bleaching event in 2000. Tops of seamounts very sculpted with channels, caves and grooves. On E6, channels were 3-6m deep with very deep rubble accumulations and high cover of dead coral.

**Mutiny – Yellow Wall**

3. top edge of seamount. Sampling conducted on a small patch with very high coral growth and survival.
4. vertical wall with high algal turf cover
5. vertical wall with turf and coralline algae and high cover of soft corals. *Siphonogorgia* sp. (a bright yellow soft coral) was very abundant and luxuriant, giving the site its name.

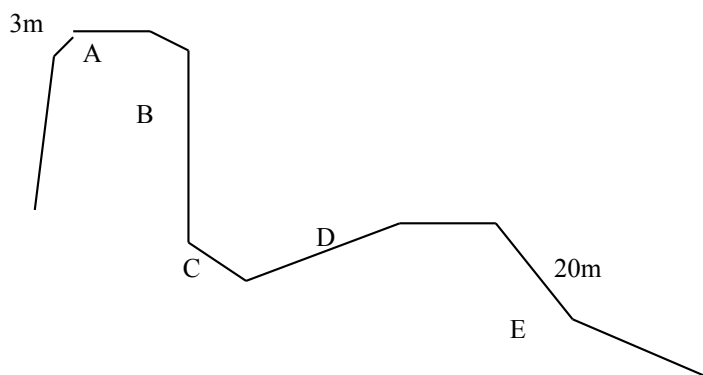
**Mutiny – North Face**

- 1) shallow patch with high cover of hard and soft corals.
- 2) vertical rock dominated by coralline and turf algae, and hard corals

**E6 – Cathedral**

- A. high cover of turf algae, with low hard coral cover
- B. good hard coral growth on rock with algal turf

Site	Type	Date
Cat's Meow, Humann Nature (Eastern Bligh Water)	Bommie	23 April 2001



Sites characterised by a series of large bommies/patch reefs at the crest of a barrier reef, with ledges/cliffs leading down to 30m. Soft and hard corals very abundant, but with high hard coral mortality in shallows. Very strong tidal currents at all sites, and hence abundant encrusting growth forms and large fish populations.

**Cat's Meow**

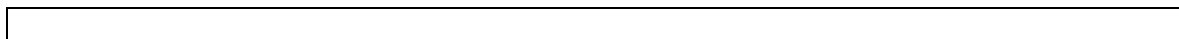
- A. top of bommie with good hard and soft coral growth
- B. vertical wall with soft corals and coralline algae dominant, moderate hard coral.
- C. base of wall and rubble bottom with low hard and soft corals.
- D. bottom with rubble and good coral growth. High cover (18%) of brightly coloured orange, yellow and green zoanthids carpeted the rubble and rock on the bottom.
- E. hard and rubble-substrate bottom with rubble and luxuriant growth of fine branching corals. Distinctive field of very delicate *Acropora/Echinopora* at 30m on lagoon slope.

**Humann Nature**

- A. rubble reef with high algal turf and moderate coral cover
- B. vertical wall with high coralline algae and low hard coral and moderate soft corals.
- C. rubble bottom with high turf and coralline algae, and abundant mushroom corals (*Fungia, Halomitra* spp.)
- D. rocky reef with moderate to high hard coral cover and mixed *Porites/faviid* assemblage.
- E. rubble bottom with good coral growth

Site	Type	Date
Undeniable, Blueberry Hill (Eastern Bligh Water)	Bommie	23 April 2001
<p>Tall pinnacle/bommies, similar life to Cat's Meow and Humann Nature, but with a steeper rocky slope into deeper depths below 20m. Vertical wall and ledges cascade to base of bommie (B). A deeper pinnacle at the edge of drop-off and a steep slope to deep water (C).</p> <p><b>Undeniable</b></p> <ul style="list-style-type: none"> <li>A. bommie top with high algal turf and reasonable coral cover.</li> <li>B. slope dominated by soft corals with moderate hard corals.</li> <li>C. Rocky substrate with high cover of soft and hard corals.</li> <li>D. deeper slope with moderate cover of hard soft corals.</li> </ul> <p><b>Blueberry Hill</b></p> <ul style="list-style-type: none"> <li>A. hard coral and turf algae on top</li> <li>B. bottom with rubble covered by coralline and turf algae and moderate coral growth</li> </ul>		

Site	Type	Date
FanTSea (Namena Barrier Reef)	Barrier wall, channel and patch reefs	24 April 2001
<p>Vertical wall below a 10-11 m sill leading into a channel into the Namena Barrier Reef. One tall pinnacle to 5m at the mid-point of the sill. Soft coral fans and black coral abundant at 20+m on wall, with thin turf and coralline algae between them. All walls on the Namena Barrier Reef sites follow this same pattern, sampled on following few days. Above the sill, the channel is dominated by smaller patch reefs and bommies on a 15m sand base.</p> <ul style="list-style-type: none"> <li>A. vertical wall dropping below 40m with a lip at 10-11m and pinnacle to 5 m. High cover of turf and coralline algae, with large soft coral fans and trees, and low cover of corals and yellow sponges.</li> <li>B. channel is dominated by small patch reefs and bommies on a 10-11m rubble/sand base, getting deeper into the lagoon. Both hard and soft coral cover low, &lt; 5%, with high coral mortality from 2000 evident.</li> </ul>		



Site	Type	Date
North Save-a-Tack Kansas	Barrier reef - wall and shallow patch reefs	24/25 April 2001
<p>V. dramatic site on the eastern edge of the Namena Barrier Reef, with a flat plain and cliff at 30 m., leading up to bommies and buttresses with their bases at 21-25 m base, some forming a large arch. High soft coral cover at varying depths from 20 to 3m. Corals variable.</p> <p>A. deeper reef with high rubble around base of bommies and/or open sandy/rubble bottoms, dominated by turf algae</p> <p>B. edges and tops of bommies, mostly hard substrate, with moderate turf algae and soft and hard corals</p> <p>C. <b>Kansas</b> - One of the inner bommies at North Save-a-Tack, with low hard and soft coral cover below 10 m., the top covered with the soft corals <i>Sarcophyton</i> and <i>Simularia</i> at &gt; 80% cover.</p>		

Site	Type	Date
Wakaya Island – Teton, 2 Thumbs Up Gau Island – Anthias Avenue, Jim’s Alley	Pillars	25 April 2001 27 April 2001
<p>Sites located at the edge of barrier reef walls surrounding the islands. Dramatic pillars reaching 3-10m on 20-30 m base platform. Vertical walls with soft corals in encrusting and fan forms, horizontal surfaces variable. Evidence of coral mortality above 10m.</p>		

**Teton**

- A. very high coral cover on top of bommie
- B. coralline algae and soft corals dominant
- C. hard substrate area with high turf
- D. deep reef dominated by algal turf

**2 Thumbs Up**

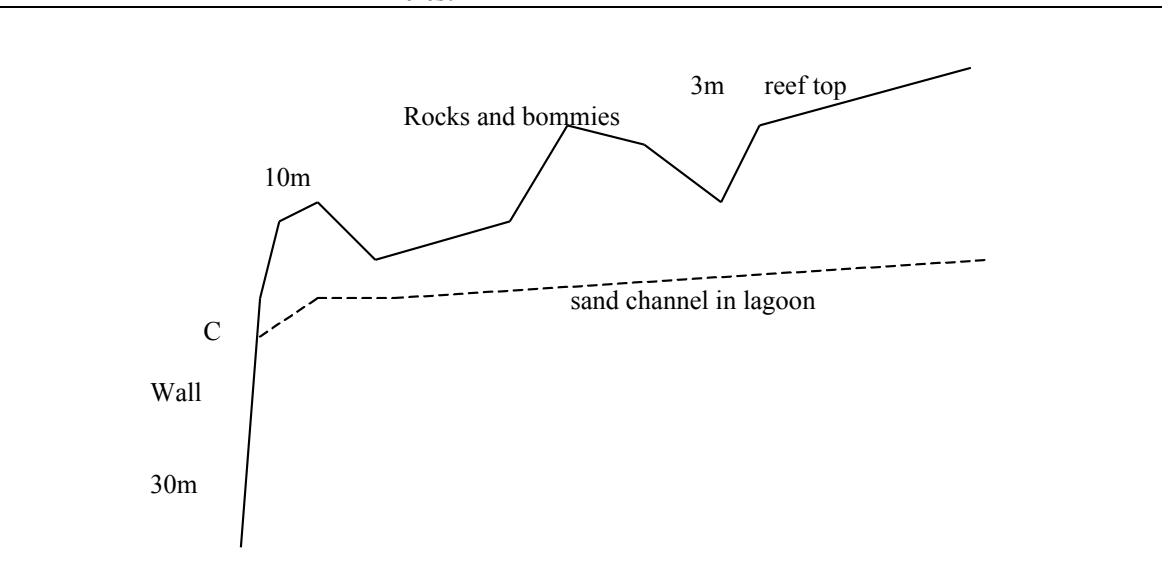
- A. hard substrate, high soft coral cover, moderate hard coral cover
- B. steeply sloping and vertical rock with turf and coralline algae, low soft and hard corals
- C. high turf and coralline algae cover and moderate soft coral cover. 80% mortality of sea fans at 18 m.

Anthias Avenue and Jim's Alley in more lagoon conditions, with less of a drop-off on the deep side. Pillars on flat sand/lagoon substrate at 20-23 m., rising to 3 m. Poor soft coral communities on vertical surfaces. Walls reflecting lagoon as opposed to ocean wall habitat. Tops w. > 60% coral mortality, and current mortality from crown-of-thorns starfish (several seen). These also had high infestation of crown-of-thorns starfish (*Acanthaster planci*), with abundant current and past feeding scars

**Anthias Avenue**

- A. high turf and coralline algae cover, with low hard coral cover
- B. high turf and coralline algae cover, with low hard and soft corals

Site	Type	Date
Lion's Den, Wakaya Island	Barrier wall, reef slope and reef crest	26 April 2001



Site located on the northern margin of the main channel into the lagoon at Wakaya I. Vertical wall from deep to 10m leads into sandy channel into the lagoon, bordered by patch reefs and bommies. The site suffered almost 100% coral mortality of corals < 12m deep from an unknown cause, first observed in November 1999, hence before the year 2000 bleaching.

**Habitat types**

- A. shallow patch reef with high algal turf and dead coral, high soft coral cover
- B. rubble bottom with turf and coralline algae, moderate coral cover
- C. classic wall with high cover of algae turf and soft coral fans.

Site	Type	Date
Blue Corner, Wakaya Islands	Reef slope and crest with pillar	26 April 2001
<p>Northwards from Lions Den, all reef has evidence of same coral mortality. Main feature is an isolated pillar on base substrate from 20m to near surface. Reef structure variable with walls, buttresses and extensive patches and bommies on a gently sloping sand bottom, to &gt; 20 m. <i>Diploria</i>/fungiids some of only corals alive.</p> <p>Habitat types</p> <p>A. Top of bommie, high cover of turf algae, mostly dead coral.</p> <p>B. Reef slope at shallow and moderate depths, dominated by turf and coralline large. Dead coral skeletons abundant.</p> <p>C. Bottom slope, high live coral cover.</p>		

Site	Type	Date
Nigali Passage, Gau Island	Reef passage	27 April 2001
<p>Nigali passage drains through the western reef of Gau island, with a sandy floor of about 25-30 m deep. The sloping wall of the passage is mostly rocky substrate with high cover of turf and coralline algae, and moderate coral growth. High evidence of coral bleaching, but many large surviving colonies of <i>Porites</i> and <i>Diploastrea</i>. At the inshore end of the passage, the channel splits into two arms that shallow rapidly, with a separating rocky structure. High coral cover on these patch reefs, with a large colony of <i>Pavona clavus</i> (&gt;10m diameter) and large monospecific stand of <i>Turbinaria reniformis</i>.</p>		

## APPENDIX 2

### **Benthic Marine Algae Collected during the NAI'A Cruises Expedition to the Kadavu and Lomaiviti Group in the Fiji Islands.**

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#### **Introduction**

Following is a preliminary report on the benthic marine macro-algae collected by the NAI'A Cruises from 21 April – 3 May 2001, from the Lomaiviti and Kadavu groups in Fiji. The collections were coordinated by Ms Sangeeta Mangubhai, formerly of the World Wide Fund for Nature (WWF) Fiji office, assisted by Dr David Obura, Mr Ed Lovell and Mr Rupeni Etika.

#### **Materials & Methods**

Specimens were initially preserved in 4% formal in seawater, and later transferred to 70% ethanol.

Identifications were made using standard light microscopy, with an Olympus SZ40 dissecting microscope, and a BH2 compound microscope. Where required hand sections were made to confirm anatomical details. Sections and small specimens (<2.0 mm in size) were preserved as microscope slides mounted in 30% corn syrup solution and stained with 1% aqueous aniline blue. Larger specimens (> 2.0 mm in size) were pressed and mounted on herbarium sheets. Specimens are housed at the Phycological Herbarium, South Pacific Regional Herbarium (SUVA-A), and will be accessioned in the Marine Studies Programme Collections database.

Images were taken with a Nikon Coolpix 990 digital camera, and are stored on Zip Discs or CD-ROM. Manipulation of the images was carried out using Adobe Photoshop Version 5.5.

Library resources were provided from G.R. South's collection of phycological books and reprints.

#### **Results**

Algae are arranged alphabetically under the four main groups: Cyanophyta, Rhodophyta, Phaeophyta and Chlorophyta. Collection data are provided, where known, and notes on some interesting species are provided. A total of 76 taxa are reported, consisting of 6 Cyanophyta, 36 Rhodophyta, 8 Phaeophyta and 26 Chlorophyta. Of these, three green algae and one red alga are newly reported for the Fiji Islands.



We thank Sangeeta Mangubhai for coordinating the collections, and the staff of the NAI'A Cruises Fiji for facilitating the field work.

### **Cyanophyta (Blue-green)**

#### ***Lyngbya confervoides* C. Agardh**

Kawakawa Reef, Buliya, *E. Lovell* 30.iv.2001, Fj 127; Undeniable, Eastern Bligh Water *S. Mangubhai* 23.iv.2001, Fj 145. Herald Passage, Kadavu, *S. Mangubhai* 01.v.2001, Fj 161. A common alga found on recently dead *Acropora* corals or entangled with other macroalgae;

#### ***Lyngbya majuscula* (Dillwyn) Harvey**

North Save-a-Tack, Namena Barrier Reef, *S. Mangubhai*, 24.iv.2001. Fj 35.

#### ***Lyngbya semiplena* (C. Agardh) J. Agardh**

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001 Fj 73, Fj 71

#### ***Lyngbya* sp.**

Samu Reef, *S. Mangubhai* 23.iv.2001. Fj 36.

#### ***Schizothrix* sp.**

Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 67.

#### ***Symploca hydroides* (Harvey) Kützing**

Yanuyanu-i-sau fringing reef, Dravuni. *S. Mangubhai* 1.v.2001. Fj 83; Fj 130; Cat's Meow, Eastern Bligh Water. *S. Mangubhai* 23.iv.2001, Fj 94; Site unknown Fj 130.

#### **Unidentified Cyanophytes**

FJ 76. Lion's Den, Wakaya, *S. Mangubhai* 26.iv.2001. Fj 91; Yanuyanu-i-sau fringing reef, Dravuni. *S. Mangubhai* 1.v.2001. Fj 86; Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 95, Fj 151; Naigoro inside reef, *S. Mangubhai* 29.iv.2001, Fj 115; Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 120; Site not known Fj 131; Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 157;

### **Rhodophyta**

#### ***Actinotrichia fragilis* (Forsskål) Børgesen**

Humann Nature, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 79. Naigoro Passage, Kadavu Island. *S. Mangubhai* 129.iv.2001. FJ 56; Site unknown *S. Mangubhai* Fj 166.

#### ***Amphiroa foliacea* Lamouroux**

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 75; Fj 89; Naigoro inside reef, *S. Mangubhai* 29.iv.2001, Fj 112; Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 121.

#### ***Amphiroa* sp.**

Yanuyanu-i-sau fringing reef, Dravuni. *S. Mangubhai* 1.v.2001. Fj 84.

#### ***Antithamnionella* sp.**

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 87; Site not known Fj 140 (epiphytic on Fj 133).

#### ***Baliella repens* Huisman & Kraft**

Site not know. *S. Mangubhai* Fj 167 (living on tube-worm).

#### ***Balliella subcorticata* (Itono) Itono & T. Tanaka**

North Dravuni, Dravuni, *S. Mangubhai* 01.v.2001. Fj 44.

#### ***Carpopeltis* sp.**

North Dravuni, Dravuni. *S. Mangubhai*. 1.v.2001. Fj 47.

#### ***Ceramium flaccidum* (Kützing) Ardissonne**

Herald Passage (south), Kadavu. *S. Mangubhai* 01.v.2001, Fj 160 (entangled with *Lynbgya confervoides*).

***Ceramium krameri*** South & Skelton

North Astrolabe Reef Lighthouse, Kadavu. *S. Mangubhai* 02.v.2001, Fj 172 (epiphytic on *Coelothrix irregularis*).

***Ceramium macilentum*** J. Agardh

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001 Fj 77. epiphytic on *Rhipilia orientalis*; North Astrolabe Reef, Kadavu. *S. Mangubhai* 2.v.2001, Fj 109, Fj 175 (epiphytic on *Coelothrix irregularis*); Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 99; Site not known Fj 141 (epiphytic on Fj 133/136);

***Ceramium marshallense*** Dawson

Kawakawa Reef, Buliya Island. *E. Lovell* 30.iv.2001, Fj 128.

***Champia compressa*** Harvey

Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 123, Fj 101.

***Champia parvula*** (C. Agardh) Harvey

Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 152.

***Chondria dangeradii*** Dawson

North Astrolabe Reef, Kadavu. *S. Mangubhai* 2.v.2001, Fj 108.

***Chondria* sp.**

Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 98.

***Coelothrix irregularis*** (Harvey) Børgesen

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 176 (growing on rock, tetrasporic).

***Corallophila apiculata***

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 173 (epiphytic on *Coelothrix irregularis*).

***Cruoriella* sp.**

North Dravuni, Dravuni, *S. Mangubhai* 01.v.2001. Fj 45.

***Dasya* sp.**

Naigoro Passage, Kadavu Island. *S. Mangubhai* 29.iv.2001. Fj 55; Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 104.

***Galaxaura* sp.**

Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 38.

***Ganonema farinosa*** (Lamouroux) Fan & Wang

Herald Passage south, Kadavu. *S. Mangubhai* 01.v.2001, Fj 163.

***Gibsmithia hawaiiensis*** Doty

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001 Fj 51.

***Griffithsia* sp.**

Site unknown Fj 129. (epiphytic on *Symploca hydroides*); Site unknown Fj 139.

***Hydrolithon farinosum*** (Lamouroux) Penrose & Chamberlain

Herald Passage south, Kadavu. *S. Mangubhai* 1.v.2001, Fj 158.

***Hypoglossum caloglossoides*** Wynne & Kraft

Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 100.

***Hypoglossum* sp.**

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001 (epiphytic on *Coelothrix irregularis*). Fj 174; Site unknown Fj 137.

***Liagora* sp.**

Buliya Passage, *D. Obura* 30.iv.2001, Fj 116.

***Lomentaria* sp.**

Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001. Fj 122.

***Mesophyllum erubescens***

Undeniable, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 143; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.iv.2001, Fj 186

***Neogoniolithon frutescens***

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001. Fj 182.

***Peyssonnelia bornetii***

Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 125.

***Pleonosporium caribaeum* (Børgesen) R. Norris**

Lion's Den, Wakaya Islands. *S. Mangubhai* 26.iv.2001.Fj 78. epiphytic on *Rhipilia orientalis*; Site not known Fj 138 (⊕\_\_); Undeniable, Eastern Bligh Water, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001 (epiphytic on *Polysiphonia* sp) Fj 146.

***Polysiphonia* sp.**

Undeniable, Eastern Bligh Water, Eastern Bligh Water, *S. Mangubhai* epiphytic on 135, Fj 142. Undeniable, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 147 (growing on rubble, abundant turf).

***Predaea weldii* Kraft & Abbott**

North Astrolabe Reef, Kadavu. *S. Mangubhai* 2.v.2001, Fj 110.

**\**Predaea laciniosa* Kraft**

Site not known *S. Mangubhai* Fj 168.

***Tolypiocladia glomerulata* (C. Agardh) Schmitz**

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001. Fj 181 (epiphytic on *Dictyota bartayresiana*).

**Phaeophyta**

***Dictyopteris repens* (Okamura) Børgesen**

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001, Fj 92; site not known *S. Mangubhai* Fj 170 (epiphytic and epizoic).

***Dictyota bartayresiana* Lamouroux**

Naigoro inside reef, *S. Mangubhai* 29.iv.2001, Fj 113; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 183; Site unknown Fj 136.

***Dictyota crispata* Lamouroux**

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001. Fj 48; Lion's Den, Wakaya Island. *S. Mangubhai* 23.iv.2001, Fj 93.

***Dictyota friabilis* Setchell**

Undeniable, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 144.

***Dictyota* sp.**

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 72; Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 124.

***Lobophora variegata* (Lamouroux) Womersley ex Oliveira**

Buliya Island. *S. Mangubhai* 30.iv.2001. Fj 63; Samu Reef. *S. Mangubhai* 21.iv.2001. Fj 66; Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 74; Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 25.iv.2001, Fj 96; Site unknown Fj 134, Fj 171.

***Padina australis* Hauck**

Teton, Namena Barrier Reef, *S. Mangubhai* 25.v.2001, Fj 117.

***Sphacelaria novae-hollandiae* Sonder**

Site unknown Fj 135.

**Chlorophyta**

***Avrainvillea* sp.**

North Dravuni, Dravuni Island. *S. Mangubhai* 1.v.2001. Fj 46.

**\**Caulerpa biserrulata*** Sonder

Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 154.

***Caulerpa brachypus*** Harvey

North Astrolabe Reef, Kadavu. *S. Mangubhai* 02.v.2001, Fj 106.

***Caulerpa cupressoides*** (Vahl) C. Agardh

Naigoro Passage, 29.iv.2001. Fj 40.

***Caulerpa microphysa*** (Weber van Bosse) J. Feldmann

Naigoro Passage, Kadavu Island. *S. Mangubhai* 29.iv.2001. Fj 57; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 184, Fj 107; Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 105.

***Caulerpa nummularia*** Harvey ex J. Agardh

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 177; Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 103.

***Caulerpa peltata*** Lamouroux

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001. Fj 50, Fj 180; Herald Passage (south), Kadavu. *S. Mangubhai* 01.v.2001, Fj 162.

***Caulerpa racemosa*** (Forsskål) J. Agardh var. *turbinata* (J. Agardh) Eubank

Naigoro Passage, *S. Mangubhai* 29.iv.2001. Fj 39. Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001. Fj 49.

***Caulerpa serrulata*** (Forsskål) J. Agardh

Naigoro inside reef, *S. Mangubhai* 29.iv.2001, Fj 114; Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 153.

***Caulerpa taxifolia*** (Vahl) C. Agardh

Great Astrolabe, Kadavu Island. *S. Mangubhai* 2.v.2001. Fj 59; Buliya Island. *S. Mangubhai* 30.iv.2001, Fj 60; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 185.

**\**Caulerpa webbiana*** Montagne var. *disticha* Vickers

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 88.

***Caulerpella ambigua*** (Okamura) Prud'homme van Reine & Lokhorst

Site unknown *S. Mangubhai* Fj 165.

***Chlorodesmis fastigiata*** (C. Agardh) Ducker

Naigoro Passage, Kadavu Island. *S. Mangubhai* 29.iv.2001. Fj 58; Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 150; Site unknown *S. Mangubhai* Fj 169, Fj 132.

**\**Cladophora ryukyuensis*** Sakai & Yoshida

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 90; Undeniable, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 148.

***Dictyosphaeria versluysii*** Weber van Bosse

FanTSea, Namena Barrier Reef, *S. Mangubhai* 24.iv.2001. Fj 81; Yanuyanu-i-sau fringing reef, Dravuni. *S. Mangubhai* 1.v.2001. Fj 85; Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 97; Herald Passage (south), Kadavu. *S. Mangubhai* 01.v.2001, Fj 159.

***Halimeda cuneata*** Hering

Buliya Island. *S. Mangubhai* 30.iv.2001. Fj 61;

***Halimeda cylindracea*** Decaisne

Kawakawa reef, Buliya Island. *E. Lovell* 30.iv.2001, Fj 126, fairly common; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 179.

***Halimeda macrophysa*** Askenasy

Humann Nature, Eastern Bligh Water. *S. Mangubhai* 23.iv.2001. Fj 80; Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 69.

***Halimeda opuntia*** (Linnaeus) Lamouroux

Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 37, Fj 68; FanTSea, Namena Barrier Reef, *S. Mangubhai* 24.iv.2001. Fj 82; Naigoro (inside reef) Kadavu Island. *E. Rupeni* 29.iv.2001. Fj 54; Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 02.v.2001, Fj 178; Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 155.

***Halimeda* sp.**

Naigoro Passage, *S. Mangubhai* 01.v.2001. Fj 41; Buliya Island. *S. Mangubhai* 30.iv.2001. Fj 62; Teton, Namena Barrier Reef, *S. Mangubhai* 25.iv.2001, Fj 102.

***Rhipidosiphon javensis*** Montagne

Undeniable, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001, Fj 149.

***Rhipilia orientalis*** A. Gepp & E. Gepp

Lion's Den, Wakaya Island. *S. Mangubhai* 26.iv.2001. Fj 70; Site unknown *S. Mangubhai* Fj 164.

***Rhipilia* sp.**

Site Unknown Fj 133.

***Tydemanina expeditionis*** Weber van Bosse

Naigoro (inside reef), Kadavu Island. *E. Rupeni* 29.iv.2001. Fj 53, *S. Mangubhai* Fj 111; Cat's Meow, Eastern Bligh Water, *E. Rupeni* 23.iv.2001. Fj 64;

***Udotea orientalis*** A. Gepp & E. Gepp

Solo Lighthouse, North Astrolabe Reef. *S. Mangubhai* 2.v.2001. Fj 52; Cat's Meow, Eastern Bligh Water, *S. Mangubhai* 23.iv.2001. Fj 65; Narikoso (north), *S. Mangubhai* 29.iv.2001, Fj 156.

***Valonia macrophysa*** Kützing

North Dravuni, Dravuni, *S. Mangubhai* 01.v.2001. Fj 42.

PHOTOGRAPHIC PLATES

Listed below, though images are excluded. Contact authors to obtain higher quality original images for inclusion in this Appendix.

**Plate 1**

A. *Champia compressa* B. *Champia parvula* C & D. *Predaea laciniosa*

**Plate 2**

A. *Ceramium flaccidum* B. *Ceramium krameri* C. *Corallophila apiculata* D, E & F. *Pleonosporium caribeum*.

**Plate 3**

A. *Neogoniolithon frutescens* B. *Griffithsia* sp. C. *Tolypocladia glomerulata* D. *Hypoglossum* sp.

**Plate 4**

A. *Sphacelaria novae-hollandiae* B. *Dictyota crispata* C. *Lobophora variegata* D & E. *Lyngbya confervoides*.

**Plate 5**

A & C. *Caulerpa peltata* B. *Caulerpa cupressoides* D. *Caulerpa racemosa* var. *turbinata* E & F. *Caulerpa brachypus* G *Caulerpa serrulata* H. *Caulerpa microphysa* I. *Caulerpa taxifolia*.

**Plate 6**

A. *Halimeda cylindrica* B. *Halimeda cuneata* C. *Halimeda opuntia* D. *Caulerpella ambigua*

**Plate 7**

A. *Valonia macrophysa* B. *Rhipilia orientalis* C. *Udotea orientalis* D. *Tydemanina expeditionis*

### APPENDIX 3.

#### Checklist of Coral Species recorded in Lomaiviti Group, Fiji.

DAVID O. OBURA

Coral species identified during the Lomaiviti Group surveys, April 21-28, 2001 are presented below. Identifications were derived from field observations and primary reference to Veron (2000). The reference columns to the right were supplied by E. Lovell, being coral species listed for Kadavu (Great Astrolabe Reef, surveyed 29 April – 3 May, 2001, see separate report) and for Fiji. Column categories refer to the following:

Overall – all species identified in Lomaiviti group

Good – verified identifications

New – verified identifications not yet included in the Fiji Reference column

Tentative – unverified identifications subject to review

Genus/species	Lomaiviti Expedition				Reference	
	Overall	Good	Tentative	New	Kadavu	Fiji
	127	89	38	5	126	166
<i>Class ANTHOZOA</i>						
<i>Subclass ZOOANTHERIA</i>						
<i>Order SCLERACTINIA</i>						
<i>Family ASTROCOENIIDAE</i>						
Stylocoeniella armata (Ehrenberg, 1834)						X
Stylocoeniella guentheri (Bassett-Smith, 1890)						X
<i>Family THAMNASTERIIDAE</i>						
Psammocora contigua (Esper, 1797)	1	1			X	X
Psammocora digitata Edward & Haime, 1851						
Psammocora nierstraszi van der Horst, 1921	1	1				X
Psammocora superficiales Gardiner, 1898					X	X
<i>Family POCILLOPORIDAE</i>						
Pocillopora damicornis (Linnaeus, 1758)	1	1			X	X
Pocillopora eydouxi Edwards & Haime, 1860	1	1			X	X
Pocillopora verrucosa (Ellis & Solander, 1786)	1	1			X	X
Pocillopora ?meandrina			1			
Seriatopora hystrix Dana, 1846	1	1			X	X
Seriatopora ?caliendrum			1			
Stylophora pistillata Esper, 1797	1	1			X	X
<i>Family ACROPORIDAE</i>						
Acropora (A.) abrotanoides (Lamarck, 1816)					X	X
Acropora (A.) aculeus (Dana, 1846)					X	X
Acropora (A.) aspera (Dana, 1846)						X
Acropora (A.) austera (Dana, 1846)					X	
Acropora (A.) carduus (Dana, 1846)					X	X
Acropora (A.) cerealis (Dana, 1846)					X	X
Acropora (A.) clathrata (Brook, 1891)	1	1			X	X
Acropora cuneata	1	1		x		
Acropora (A.) cytherea (Dana, 1846)	1	1			X	
Acropora (A.) digitifera (Dana, 1846)					X	X

Acropora (A.) divaricata (Dana, 1846)	1	1			X	X
Acropora (A.) echinata (Dana, 1846)	1	1			X	X
Acropora (A.) elseyi (Brook, 1892)					X	X
Acropora (A.) florida (Dana, 1846)	1	1			X	X
Acropora (A.) gemmifera (Brook, 1892)					X	
Acropora (A.) grandis (Brook, 1892)	1	1			X	
Acropora (A.) horrida (Dana, 1846)	1	1				X
Acropora (A.) humilis (Dana, 1846)	1	1			X	X
Acropora (A.) hyacinthus (Dana, 1846)	1	1			X	X
Acropora (A.) intermedia (Dana, 1846)					X	X
Acropora (A.) latistella (Brook, 1892)					X	
Acropora (A.) longicyathus (Edwards & Haime, 1860)	1	1			X	
Acropora loripes	1		1	x		
Acropora lovelli	1		1	x		
Acropora (A.) microphthalma (Verrill, 1869)	1		1		X	
Acropora (A.) millepora (Ehrenberg, 1834)					X	X
Acropora (A.) monticulosa (Bruggemanni, 1879)					X	
Acropora (A.) muricata (Dana, 1846)	1	1			X	X
Acropora (A.) nana (Studer, 1878)					X	
Acropora (A.) nasuta (Dana, 1846)	1	1			X	X
Acropora (A.) paniculata Verrill, 1902	1	1			X	X
Acropora (A.) pulchra (Brook, 1891)						X
Acropora (A.) robusta (Dana, 1846)					X	X
Acropora (A.) samoensis (Brook, 1891)	1	1			X	
Acropora (A.) secale (Studer, 1878)					X	X
Acropora (A.) selago (Studer, 1878)					X	X
Acropora (A.) subulata (Brook, 1893)					X	
Acropora (A.) subglabra (Brook, 1891)					X	X
Acropora (A.) tenuis (Dana, 1846)	1	1			X	X
Acropora (A.) valenciennesi (Edwards & Haime, 1860)					X	X
Acropora (A.) valida (Dana, 1846)					X	X
Acropora (A.) vauhani Wells, 1954						X
Acropora (A.) verweyi Veron and Wallace, 1984					X	
Acropora (A.) willisae Veron and Wallace, 1984					X	
Acropora (I.) crateriformis (Gardiner, 1898)						X
Acropora (I.) cuneata (Dana, 1846)						X
Acropora (I.) palifera (Lamarck, 1816)						X
Acopora sp. (fine)			1			
Acropora sp. (pink)			1			
Acropora sp. (staghorn)			1			
Acropora sp. (collected, 3)			1			
Acropora sp. (collected, 4)			1			
Acropora sp. (collected, 5)			1			
Acropora ?rosara			1			
Anacropora sp.1						X
Anacropora sp. 2						X
Astreopora listeri Bernard, 1896	1		1		X	
Astreopora myriophthalma (Lamarck, 1816)	1	1			X	X
Montipora aequituberculata Bernard, 1897	1		1		X	
Montipora danae Edwards & Haime, 1851					X	
Montipora foliosa (Pallas, 1766)						X (group)
Montipora foveolata (Dana, 1846)						X

Montipora spumosa	1	1		x		
Montipora tuberculosa (Lamarck, 1816)	1		1			X
Montipora verrucosa (Lamarck, 1816)	1	1			X	X
Montipora sp. (blue)			1			
Montipora sp. (red)			1			
Montipora ?hoffmeisteri (knobbly)			1			
<i>Family AGARICIDAE</i>						
Gardineroseris planulata (Dana, 1846)	1	1			X	X
Leptoseris explanata Yabe & Sugiyama, 1941	1	1				X
Leptoseris gardineri Van der Horst, 1921						X
Leptoseris hawaiiensis Vaughan, 1907	1	1				X
Leptoseris mycetoseroides Wells, 1954	1	1			X	X
Leptoseris scabra Vaughan, 1907	1	1			X	X
Pachyseris speciosa (Dana, 1846)	1	1			X	X
Pachyseris rugosa (Lamarck, 1801)	1	1			X	
Pavona cactus (Forsk., 1775)						X
Pavona clavus (Dana, 1846)	1	1			X	X
Pavona decussata (Dana, 1846)						X
Pavona divaricata (Lamarck, 1816)						X
Pavona explanulata (Lamarck, 1816)	1	1				X
Pavona maldivensis (Gardiner, 1905)	1	1			X	X
Pavona minuta Wells, 1954	1	1			X	X
Pavona varians Verrill, 1864	1	1			X	X
Pavona (P.) venosa (Ehrenberg, 1834)					X	
<i>Family SIDERASTREIDAE</i>						
Coscinaraea columna (Dana, 1846)	1	1			X	
Coscinaraea exesa	1		1			
<i>Family FUNGIIDAE</i>						
Cycloseris costulata (Ortmann, 1889)						X
Cycloseris cyclolites (Lamarck, 1801)						X
Cycloseris patelliformis Boschma, 1923						X
Cycloseris vauhani (Boschma, 1923)						X
Diaseris distorta Michelin, 1842						X
Fungia (D.) danai Edwards & Haime, 1851	1	1			X	X
Fungia (D.) scruposa Kluzinger, 1879						X
Fungia (D.) horrida Dana, 1846						X
Fungia (C.) echinata (Pallas, 1766)	1		1		X	
Fungia (F.) fungites (Linnaeus, 1758)	1	1				X
Fungia (P.) mollucensis Van der Horst, 1919						X
Fungia (P.) paumotensis Stutchbury, 1833	1	1				X
Fungia (P.) scutaria Lamarck, 1801					X	X
Fungia (V.) concinna Verrill, 1864					X	X
Fungia (V.) granulosa Klunzinger, 1879						X
Fungia (V.) repanda Dana, 1846	1		1			X
Fungia (V.) scabra Doderlein, 1901						X
Fungia (C.) simplex (Gardiner, 1905)					X	
Halomitra pileus (Linnaeus, 1758)	1	1			X	
Herpolitha limax (Houttuyn, 1772)	1	1			X	
Lithophyllon edwardsi Rousseau, 1854	1	1				Cf. X
Podabacia crustacea Edwards and Haime, 1849					X	X
Polyphyllia talpina (Lamarck, 1801)					X	
Sandalolitha robusta (Quelch, 1886)					X	
Zoopilus echinatus Dana, 1846					X	X



<i>Family PORITIDAE</i>					
Alveopora sp. 1	1		1		X
Goniopora columna Dana, 1846				X	
Goniopora sp. 1					X
Goniopora sp. 2					X
Goniopora sp. 3					X
Porites (P.) annae Crossland, 1952	1		1		X
Porites (P.) australiensis Vaughan, 1918					X
Porites (P.) cylindrica Dana, 1846	1	1		X	
Porites (P.) lichen Dana, 1846					X
Porites (P.) lobata Dana, 1846				X	X
Porites (P.) lutea Edwards & Haime, 1860	1	1		X	
Porites (P.) murrayensis Vaughan, 1918	1		1		X
Porites (P.) nigrescens Dana, 1848					X
Porites (S.) rus (Forsk., 1775)	1	1		X	X
Porites ?vaughani			1		
<i>Family FAVIIDAE</i>					
Caulastrea furcata Dana, 1846				X	X
Cyphastrea chalcidicum (Forsk., 1775)	1		1		X
Cyphastrea micropthalma (Lamarck, 1816)	1		1		X
Cyphastrea serailia (Forsk., 1775)	1	1			X
Cyphastrea japonica Yabe & Sugiyama, 1932				X	X
Diploastrea heliopora (Lamarck, 1816)	1	1		X	X
Echinopora gemmacea Lamarck, 1816	1	1			X
Echinopora horrida Dana, 1846	1	1		X	X
Echinopora lamellosa (Esper, 1795)	1	1		X	X
Barabattoia amicorum (Edwards and Haime, 1850)					Cf. X
Favia fавus (Forsk., 1775)	1	1			X
Favia matthaii Vaughan, 1918				X	X
Favia maximai Veron, Pichon and Wijsman-Best, 1977				X	
Favia pallida (Dana, 1846)	1	1		X	X
Favia rotumana (Gardiner, 1899)					X
Favia rotundata (Veron, Pichon & Best, 1977)				X	X
Favia stelligera (Dana, 1846)	1	1		X	X
Favia maritima			1		
Favites abdita (Ellis & Solander, 1786)	1	1		X	X
Favites chinensis (Verrill, 1866)					X
Favites flexuosa (Dana, 1846)				X	X
Favites halicora (Ehrenberg, 1834)	1	1		X	X
Favites pentagona (Esper, 1794)	1		1		X
Favites vasta	1		1		
Goniastrea aspera				X	
Goniastrea australensis (Edwards & Haime, 1857)					X
Goniastrea edwardsi Chevalier, 1971	1	1			X
Goniastrea pectinata (Ehrenberg, 1834)	1	1			X
Goniastrea retiformis (Lamarck, 1816)	1	1		X	X
Leptastrea bewickensis (Veron, Pichon and Wijsman-best, 1977)					X
Leptastrea purpurea (Dana, 1846)	1	1		X	X
Leptastrea transversa Klunzinger, 1979	1	1			X
Leptastrea ?inaequalis			1		
Leptoria phrygia (Ellis & Solander, 1786)	1	1		X	X

Leptoria ?irregularis			1			
Montastrea annuligera	1		1			
Montastrea curta (Dana, 1846)	1	1			X	X
Montastrea magnistellata Chevalier, 1971					X	X
Oulophyllia crispa (Lamarck, 1816)	1	1			X	X
Platygyra daedalea (Ellis & Solander, 1786)	1	1			X	X
Platygyra lamellina (Ehrenberg, 1834)					X	
Platygyra pini Chevalier, 1975	1	1			X	X
Platygyra sinensis (Edwards & Haime, 1849)	1	1			X	X
Platygyra ?acuta			1			
Platygyra ?ryukyusensis			1			
Plesiastrea versipora (Lamarck, 1816)					X	
<i>Family TRACHYPHYLLIIDAE</i>						
Trachyphyllia geoffroyi						X
<i>Family OCULINIDAE</i>						
Acrhelia horrescens (Dana, 1846)						X
Galaxea cf. astreata (Lamarck, 1816)					X	X
Galaxea fascicularis (Linnaeus, 1767)					X	X
<i>Family MERULINIDAE</i>						
Clavarina triangularis Veron & Pichon, 1979						Cf. X
Hydnophora exesa (Pallas, 1766)	1	1			X	X
Hydnophora microconos (Lamarck, 1816)	1	1			X	X
Hydnophora rigida (Dana, 1846)	1	1			X	
Hydnophora pilosa			1			
Merulina ampliata (Ellis & Solander, 1786)	1	1			X	X
Merulina scabricula (Dana, 1846)	1	1				X
Scapophyllia cylindrica (Edwards and Haime, 1848)	1	1			X	X
<i>Family MUSSIDAE</i>						
Acanthastrea brevis	1		1	x		
Acanthastrea echinata (Dana, 1846)	1	1			X	
Lobophyllia corymbosa (Forskal, 1775)					X	X
Lobophyllia hataii Yabe, Sugiyama & Eguchi, 1936	1	1				X
Lobophyllia hemprichii (Ehrenberg, 1834)	1	1			X	X
Lobophyllia pachysepta Chevalier, 1975					X	
Symphyllia agaricia Edwards and Haime, 1849						X
Symphyllia radians (Edwards & Haime, 1849)					X	
Symphyllia recta (Dana, 1846)					X	X
Scolymia vitiensis Bruggemann, 1877					X	
<i>Family PECTINIIDAE</i>						
Echinophyllia aspera (Ellis & Solander, 1786)	1	1			X	X
Echinophyllia echinata (Saville-Kent, 1871)					X	X
Mycedium elephantotus (Pallas, 1766)	1	1			X	X
Oxypora glabra Nemenzo, 1959					X	X
Oxypora lacera (Verrill, 1864)	1	1			X	X
Pectinia paeonia (Dana, 1846)						X
<i>Family CARYOPHYLLIIDAE</i>						
Catalophyllia jardinei (Saville-Kent, 1893)						X
Euphyllia cristata Chevalier, 1971						X
Euphyllia glabrescens (Chamisso & Eysenhardt, 1821)						X
Physogyra lichensteini Edwards and Haime, 1851						X
Plerogyra simplex Rehberg, 1892					X	
Plerogyra sinuosa (Dana, 1846)	1	1			X	X

<i>Family DENDROPHYLLIIDAE</i>				
Tubastrea aurea (Quoy & Gaimard)				X
Tubastraea micrantha Ehrenberg, 1834	1	1	X	X
Turbinaria frondens (Dana, 1846)				X
Turbinaria mesenterina	1	1		X
Turbinaria peltata (Esper, 1794)	1	1	X	X
Turbinaria radicalis Bernard, 1896				X
Turbinaria reniformis Bernard, 1896	1	1	X	Cf. X
Turbinaria stellulata (Lamarck, 1816)	1	1		X
Turbinaria ?patula			1	
<i>Order STOLONIFERA</i>				
<i>Family TUBIPORIDAE</i>				
Tubipora musica Linnaeus, 1758			X	
<i>Class HYDROZOA</i>				
<i>Order MILLEPORINA</i>				
<i>Family MILLEPORIDAE</i>				
Millepora exaesa Forskal, 1775	1	1		X
Millepora platyphylla Hemprich & Ehrenberg, 1834				X
Millepora tenella Boschma, 1949	1	1		X
Millepora tuberosa Boschma, 1966				

## APPENDIX 4

### Fish species checklist for sites in the Lomaiviti Group, February – April 2001.

Data collected and made available by:

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<i>Family</i>	<i>Species</i>	
	<b>Species richness -&gt;</b>	
Acanthuridae	<i>Acanthurus dussumieri</i> <i>Acanthurus lineatus</i> <i>Acanthurus nigricans</i> <i>Acanthurus nigricauda</i> <i>Acanthurus olivaceus</i> <i>Acanthurus pyroferus</i> <i>Acanthurus thompsoni</i> <i>Ctenochaetus binotatus</i> <i>Ctenochaetus striatus</i> <i>Ctenochaetus tominiensis</i> <i>Naso brevirostris</i> <i>Naso lituratus</i> <i>Naso unicornis</i> <i>Naso vlamingi</i> <i>Zanclus cornutus</i> <i>Zebrasoma scopas</i> <i>Zebrasoma veliferum</i>	<i>Ecsenius lineatus</i> <i>Ecsenius midas</i> <i>Escenius bicolor</i> <i>Exalias brevis</i> <i>Plagiotremus flavus (Fiji spp)</i> <i>Plagiotremus rhinorhynchus</i> <i>Plagiotremus tapienosoma</i>
		Caesionidae
		<i>Caesio caerilaurea</i> <i>Caesio lunaris</i> <i>Caesio teres</i> <i>Paracaesio xanthura</i> <i>Pterocaesio pisang</i> <i>Pterocaesio tile</i> <i>Pterocaesio triluneata</i> <i>Pterocaseio marri</i> <i>Pterocaseio tessellata</i>
		Carangidae
		<i>Carangoides ferdau</i> <i>Caranx melampyngus</i> <i>Caranx sexfasciatus</i>
		Chaetodontidae
		<i>Chaetodon auriga</i> <i>Chaetodon baronessa</i> <i>Chaetodon bennetti</i> <i>Chaetodon citrinellus</i> <i>Chaetodon ephippium</i> <i>Chaetodon kleinii</i> <i>Chaetodon linoelatus</i> <i>Chaetodon melannotus</i> <i>Chaetodon mertensii</i> <i>Chaetodon pelewensis</i> <i>Chaetodon plebeius</i> <i>Chaetodon rafflessi</i> <i>Chaetodon reticulatus</i> <i>Chaetodon trifascialis</i> <i>Chaetodon trifasciatus</i> <i>Chaetodon ulietensis</i> <i>Chaetodon unimaculatus</i> <i>Chaetodon vagabundus</i> <i>Forcipiger flavissimus</i> <i>Hemitaenichthys polylepis</i> <i>Heniochus acuminatus</i> <i>Heniochus chrysostomus</i> <i>Heniochus monoceros</i> <i>Heniochus singularis</i>
Apogonidae	<i>Apogon kallopterus</i> <i>Cheilodipterus macrodon</i> <i>Cheilodipterus quinquelineatus</i>	
Balistidae	<i>Aluterus scriptus</i> <i>Balistapus undulatus</i> <i>Balistoides conspicillum</i> <i>Balistoides viridescens</i> <i>Melichthys vidua</i> <i>Odonus niger</i> <i>Paraluteres prionurus</i> <i>Pseudobalistes flavimarginatus</i> <i>Sufflamen bursa</i> <i>Sufflamen chrysopterus</i>	
Blenniidae	<i>Aspidontus taeniatus</i> <i>Atrosalarias fuscus</i>	

	<i>Heniochus varius</i>		<i>Thalassoma lunare</i>
Cirrhitidae	<i>Cirrhitichthys falco</i> <i>Cirrhitichthys oxycephalus</i> <i>Neocirrhites armatus</i> <i>Oxycirrhites typus</i> <i>Paracirrhites arcatus</i> <i>Paracirrhites forsteri</i>	Lethrinidae	<i>Thalassoma lutescens</i> <i>Gymnocranius euanus</i> <i>Lethrinus atkinsoni</i> <i>Lethrinus erythracanthus</i> <i>Lethrinus olivaceus</i> <i>Monotaxis grandoculus</i> <i>Scolopsis bilineatus</i> <i>Scolopsis temporalis (Fiji spp)</i>
Gobiidae	<i>Amblyeleotris guttata</i> <i>Amblyeleotris randalli</i> <i>Amblygobius rainfordi</i> <i>Coryphopterus signipinnis</i> <i>Nemateleotris magnifica</i> <i>Ptereleotris evides</i> <i>Stonogobiops xanthorhinica</i> <i>Valencienna puellaris</i> <i>Valenciennesa stridata</i>	Lutjanidae	<i>Aphareus furca</i> <i>Aprion virescens</i> <i>Lutjanus bohar</i> <i>Lutjanus gibbus</i> <i>Lutjanus kasmira</i> <i>Lutjanus monostigma</i> <i>Lutjanus semicinctus</i> <i>Macolor macularis</i> <i>Macolor niger</i> <i>Symphoricichthys spilurus</i>
Haemullidae	<i>Plectrorhinchus chaetodonoides</i> <i>Plectrorhinchus picus</i> <i>Plectrorhinchus unicolor</i>	Mullidae	<i>Parupeneus barberinoides</i> <i>Parupeneus barberinus</i> <i>Parupeneus bifasciatus</i> <i>Parupeneus cyclostomus</i> <i>Parupeneus multifasciatus</i> <i>Parupeneus pleurostigma</i>
Holocentridae	<i>Myripristis adusta</i> <i>Myripristis kumtee</i> <i>Neoniphon sammara</i> <i>Sargocentron caudimaculatum</i> <i>Sargocentron melanospilos</i> <i>Sargocentron spiniferum</i>	Ostraciidae	<i>Ostracion cubicus</i> <i>Ostracion solorensis</i>
Labridae	<i>Anampses neoguinaicus</i> <i>Anampses twisti</i> <i>Bodianus axillaris</i> <i>Bodianus diana</i> <i>Bodianus loxozonus</i> <i>Bodianus mesothorax</i> <i>Cheilinus chlorourus</i> <i>Cheilinus fasciatus</i> <i>Cheilinus undulatus</i> <i>Cirrhilabrus exquisitus</i> <i>Cirrhilabrus rubripinnis</i> <i>Cirrhilabrus temminckii</i> <i>Coris aygula</i> <i>Coris gaimard</i> <i>Epibulus insidiator</i> <i>Gomphosus varius</i> <i>Halichoeres hortulanus</i> <i>Halichoeres ornatissimus</i> <i>Halichoeres prosopoeion</i> <i>Hemigymnus fasciatus</i> <i>Hemigymnus melapterus</i> <i>Labrichthys unilineatus</i> <i>Labroides bicolor</i> <i>Labroides dimidiatus</i> <i>Labropsis micronesica</i> <i>Labropsis xanthonota</i> <i>Macropharyngodon negrosensis</i> <i>Oxycheilinus diagrammus</i> <i>Pseudocheilinus octotaenia</i> <i>Thalassoma amblycephalum</i> <i>Thalassoma hardwicke</i> <i>Thalassoma janseni</i>	Pinguipedidae	<i>Parapercis cylindrica</i> <i>Parapercis hexophtalma</i> <i>Parapercis millepunctata</i>
		Pomacanthidae	<i>Apolemichthys trimaculatus</i> <i>Centropyge bicolor</i> <i>Centropyge bispinosus</i> <i>Centropyge flavissimus</i> <i>Centropyge heraldi</i> <i>Centropyge nox</i> <i>Genicanthus melanospilos</i> <i>Pomacanthus imperator</i> <i>Pygoplites diacanthus</i>
		Pomacentridae	<i>Abudefduf sexfasciatus</i> <i>Abudefduf vaigiensis</i> <i>Amblyglyphidodon aureus</i> <i>Amblyglyphidodon curacao</i> <i>Amblyglyphidodon leucogaster</i> <i>Amphiprion chrysopterus</i> <i>Amphiprion frenatus</i> <i>Amphiprion perideraion</i> <i>Chromis amboinensis</i> <i>Chromis analis</i> <i>Chromis atripes</i> <i>Chromis iomelas</i> <i>Chromis lepidolepsis</i> <i>Chromis margaritifer</i> <i>Chromis retrofasciata</i> <i>Chromis ternatensis</i> <i>Chromis vanderbilti</i> <i>Chromis viridis</i>

	<i>Chromis xanthurus</i>	Siganidae	<i>Siganus argenteus</i>
	<i>Chrysiptera leucopoma</i>		<i>Siganus punctatus</i>
	<i>Chrysiptera talboti</i>		<i>Siganus uspi</i>
	<i>Chrysiptera taupou</i>	Sphyraenidae	<i>Sphyraena barracuda</i>
	<i>Dascyllus aranus</i>		<i>Sphyraena forsteri</i>
	<i>Dascyllus reticulatus</i>		<i>Sphyraena jello</i>
	<i>Dascyllus trimaculatus</i>		<i>Sphyraena genie</i>
	<i>Lepidozygus tapienosoma</i>	Syngnathidae	<i>Corythoichthys amplexus</i>
	<i>Neoglyphidodon nigroris</i>		<i>Corythoichthys schultzi</i>
	<i>Plectroglyphidodon dickii</i>	Tetraodontidae	<i>Arothron nigropunctatus</i>
	<i>Plectroglyphidodon johnstonianus</i>		<i>Canthigaster solandri</i>
	<i>Plectroglyphidodon lacrymatus</i>		<i>Canthigaster valentini</i>
	<i>Pomacentrus imitator</i>		<i>Hoplatilus starcki</i>
	<i>Pomacentrus nigromarginatus</i>	Diverse groups	<i>Heteroconger hassi</i>
	<i>Pomacentrus vaiuli</i>		<i>Aulostomus chinensis</i>
Scaridae	<i>Cetoscarus bicolor</i>		<i>Belonoperca chabanaudi</i>
	<i>Hipposcarus longiceps</i>		<i>Bothus mancus</i>
	<i>Scarus bleekeri</i>		<i>Discotrema crinophila</i>
	<i>Scarus chameleon</i>		<i>Echeneis naucrates</i>
	<i>Scarus dimidiatus</i>		<i>Gorgasia maculatus</i>
	<i>Scarus frenatus</i>		<i>Malacanthus brevisrostris</i>
	<i>Scarus microrhinos</i>		<i>Malacanthus latovittatus</i>
	<i>Scarus niger</i>		<i>Platax pinnatus</i>
	<i>Scarus rubroviolaceus</i>		<i>Synchiropus ocellatus</i>
	<i>Scarus schlegeli</i>		<i>Synodus variegatus</i>
	<i>Scarus sordidus</i>	Sharks	<i>Carcharhinus amblyrhynchos</i>
	<i>Scarus spinus</i>		<i>Triaenodon obesus</i>
Scombridae	<i>Gymnosarda unicolor</i>		
	<i>Rastrelliger kanagurta</i>		
	<i>Scomberoides lysan</i>		
	<i>Scomberomorus commerson</i>		
Scorpaenidae	<i>Cephalopholis argus</i>		
	<i>Cephalopholis urodeta</i>		
	<i>Luzonichthys waitei</i>		
	<i>Psuedanthias squamipinnus</i>		
	<i>Pterois volitans</i>		
	<i>Scorpaenopsis diabolus</i>		
	<i>Scorpaenopsis venosa</i>		
	<i>Taenianotus triacanthus</i>		
Serranidae	<i>Cephalopholis miniata</i>		
	<i>Cephalopholis argus</i>		
	<i>Cephalopholis leopardus</i>		
	<i>Cephalopholis urodeta</i>		
	<i>Epinephelus caeruleopunctatus</i>		
	<i>Epinephelus fuscoguttatus</i>		
	<i>Epinephelus maculatus</i>		
	<i>Gracila albomarginata</i>		
	<i>Luzonichthys waitei</i>		
	<i>Plectropomus leopardus</i>		
	<i>Pseudanthias cooperi</i>		
	<i>Pseudanthias pascalus</i>		
	<i>Pseudanthias pleurotaenia</i>		
	<i>Pseudochromis porphyreus</i>		
	<i>Psuedanthias hypselosoma</i>		
	<i>Psuedanthias squamipinnus</i>		
	<i>Serranocirrhitis latus</i>		
	<i>Variola louti</i>		